

Eberline Services  
W.O. No. R0-11-165-7575

Bechtel Hanford Inc.  
SDG H1151

Case Narrative

Page 1 of 1

## 1.0 GENERAL

Bechtel Hanford Inc. (BHI) Sample Delivery Group H1151 was composed of two other solid samples designated under SAF No. B99-028 with a Project Designation of: 100-HR-3 Pump & Treat-Resin Sampling.

The samples were received as stated on the Chain-of-Custody document. Any discrepancies are noted on the Eberline Services Sample Receipt Checklist. The results were transmitted to BHI via e-Fax on January 5, 2001.

## 2.0 ANALYSIS NOTES

### 2.1 Isotopic Uranium Analyses

No problems were encountered during the course of the analyses.

### 2.2 Total Strontium Analyses

No problems were encountered during the course of the analyses.

### 2.3 Technetium-99 Analyses

No problems were encountered during the course of the analyses.

### 2.4 Tritium Analyses

No problems were encountered during the course of the analyses.

RECEIVED  
MAR 28 2001  
EDMC

### Case Narrative Certification Statement

"I certify that this data package is in compliance with the SOW, both technically and for completeness, for other than the conditions detailed above. Release of the data obtained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

Melissa C. Mannion  
Melissa C. Mannion  
Program Manager

01/25/01  
Date

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

**SAMPLE SUMMARY**

SDG 7575  
 Contact Melissa C. Mannion

Client Hanford  
 Contract TRC-SBB-207925  
 Case no SDG H1151

CLIENT SAMPLE ID	LOCATION	MATRIX	LEVEL	LAB SAMPLE ID	SAF NO	CHAIN OF CUSTODY	COLLECTED
B10V62	100-HR-3	SOLID		R011165-01	B99-028	B99-028-57	11/20/00 08:00
B10V63	100-HR-3	SOLID		R011165-02	B99-028	B99-028-57	11/20/00 08:15
Method Blank		SOLID		R011165-04	B99-028		
Lab Control Sample		SOLID		R011165-03	B99-028		
Duplicate (R011165-01)	100-HR-3	SOLID		R011165-05	B99-028		11/20/00 08:00

**SAMPLE SUMMARY**

Page 1

**SUMMARY DATA SECTION**

Page 3

Lab id TMANC  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CS  
 Version 3.06  
 Report date 01/05/01

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

SDG 7575  
 Contact Melissa C. Mannion

**QC SUMMARY**

Client Hanford  
 Contract TRC-SBB-207925  
 Case no SDG H1151

QC BATCH	CHAIN OF CUSTODY	CLIENT SAMPLE ID	MATRIX	% SOLIDS	SAMPLE AMOUNT	BASIS AMOUNT	DAYS SINCE RECEIVED	LAB COLL	LAB SAMPLE ID	DEPARTMENT SAMPLE ID
7575	B99-028-57	B10V62	SOLID	100.0			11/22/00	2	R011165-01	7575-001
		B10V63	SOLID	100.0			11/22/00	2	R011165-02	7575-002
		Method Blank	SOLID						R011165-04	7575-004
		Lab Control Sample	SOLID						R011165-03	7575-003
		Duplicate (R011165-01)	SOLID	100.0			11/22/00	2	R011165-05	7575-005

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

SDG 7575  
 Contact Melissa C. Mannion

**PREP BATCH SUMMARY**

Client Hanford  
 Contract TRC-SBB-207925  
 Case no SDG H1151

TEST	MATRIX	METHOD	PREPARATION ERROR		PLANCHETS ANALYZED		QUALI-						
			BATCH	2σ %	CLIENT	MORE		RE	BLANK	LCS	DUP/ORIG	MS/ORIG	FIERS
Alpha Spectroscopy													
U	SOLID	Uranium, Isotopic in Soil	6962-145	5.0	2			1	1	1/1			
Beta Counting													
SR	SOLID	Total Strontium in Soil	6962-145	10.0	2			1	1	1/1			
TC	SOLID	Technetium 99 in Soil	6962-145	10.0	2			1	1	1/1			
Liquid Scintillation Counting													
H	SOLID	Tritium in Soil	6962-145	10.0	2			1	1	1/1			

Duplicates and Matrix Spikes are those with original (Client) sample in this Sample Delivery Group.  
 Blank and LCS planchets are those in the same preparation batch as some Client, Duplicate or Spike sample.

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

SDG 7575  
 Contact Melissa C. Mannion

**WORK SUMMARY**

Client Hanford  
 Contract TRC-SBB-207925  
 Case no SDG H1151

CLIENT SAMPLE ID	LAB SAMPLE ID									
LOCATION		MATRIX	COLLECTED		TEST	SUF-				
CUSTODY	SAF No		RECEIVED	PLANCHET		FIX	ANALYZED	REVIEWED	BY	METHOD
B10V62			R011165-01	7575-001	H		12/21/00	01/05/01	MCM	Tritium in Soil
100-HR-3		SOLID	11/20/00	7575-001	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil
B99-028-57	B99-028		11/22/00	7575-001	TC		12/22/00	01/05/01	MCM	Technetium 99 in Soil
				7575-001	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil
B10V63			R011165-02	7575-002	H		12/22/00	01/05/01	MCM	Tritium in Soil
100-HR-3		SOLID	11/20/00	7575-002	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil
B99-028-57	B99-028		11/22/00	7575-002	TC		12/22/00	01/05/01	MCM	Technetium 99 in Soil
				7575-002	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil
Method Blank			R011165-04	7575-004	H		12/21/00	01/05/01	MCM	Tritium in Soil
		SOLID		7575-004	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil
	B99-028			7575-004	TC		12/22/00	01/05/01	MCM	Technetium 99 in Soil
				7575-004	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil
Lab Control Sample			R011165-03	7575-003	H		12/22/00	01/05/01	MCM	Tritium in Soil
		SOLID		7575-003	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil
	B99-028			7575-003	TC		12/28/00	01/05/01	MCM	Technetium 99 in Soil
				7575-003	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil
Duplicate (R011165-01)			R011165-05	7575-005	H		12/21/00	01/05/01	MCM	Tritium in Soil
100-HR-3		SOLID	11/20/00	7575-005	SR		12/14/00	01/05/01	MCM	Total Strontium in Soil
	B99-028		11/22/00	7575-005	TC		12/27/00	01/05/01	MCM	Technetium 99 in Soil
				7575-005	U		12/22/00	01/05/01	MCM	Uranium, Isotopic in Soil

COUNTS OF TESTS BY SAMPLE TYPE										
TEST	SAF No	METHOD	REFERENCE	CLIENT	MORE	RE	BLANK	LCS	DUP SPIKE	TOTAL
H	B99-028	Tritium in Soil	TRITIUM_COX_LSC	2			1	1	1	5
SR	B99-028	Total Strontium in Soil	SRTOT_SEP_PRECIP_GPC	2			1	1	1	5
TC	B99-028	Technetium 99 in Soil	TC99_TR_SEP_LSC	2			1	1	1	5
U	B99-028	Uranium, Isotopic in Soil	UIISO_PLATE_AEA	2			1	1	1	5
TOTALS				8			4	4	4	20

**WORK SUMMARY**

Page 1

**SUMMARY DATA SECTION**

Page 6

Lab id TMANC  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CWS  
 Version 3.06  
 Report date 01/05/01

TMA / RICHMOND  
SAMPLE DELIVERY GROUP H1151

R011165-04

Method Blank

METHOD BLANK

SDG <u>7575</u>	Client/Case no <u>Hanford</u>	SDG <u>H1151</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011165-04</u>	Client sample id <u>Method Blank</u>	
Dept sample id <u>7575-004</u>	Material/Matrix <u>SOLID</u>	
	SAF No <u>B99-028</u>	

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	-0.381	3.4	5.9	400	U	H
Total Strontium	SR-RAD	0.062	0.13	0.25	1.0	U	SR
Technetium 99	14133-76-7	0.209	0.28	0.82	15	U	TC
Uranium 233	U-233/234	0	0.052	0.20	1.0	U	U
Uranium 235	15117-96-1	0	0.063	0.24	1.0	U	U
Uranium 238	U-238	0.026	0.052	0.20	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

QC-BLANK #36906

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H1151

R011165-03

Lab Control Sample

**LAB CONTROL SAMPLE**

SDG <u>7575</u>	Client/Case no <u>Hanford</u> SDG <u>H1151</u>
Contact <u>Melissa C. Mannion</u>	Case no <u>TRC-SBB-207925</u>
Lab sample id <u>R011165-03</u>	Client sample id <u>Lab Control Sample</u>
Dept sample id <u>7575-003</u>	Material/Matrix <u>SOLID</u>
	SAF No <u>B99-028</u>

ANALYTE	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ADDED pCi/g	2σ ERR pCi/g	REC %	3σ LMTS (TOTAL)	PROTOCOL LIMITS
Tritium	1420	19	5.6	400		H	1480	59	96	84-116	80-120
Total Strontium	22.3	0.84	0.24	1.0		SR	22.0	0.88	101	83-117	80-120
Technetium 99	121	4.5	0.95	15		TC	118	4.7	102	83-117	80-120
Uranium 233	19.5	1.9	0.89	1.0		U	18.6	0.74	105	82-118	80-120
Uranium 235	14.6	1.6	0.22	1.0		U	15.1	0.60	97	82-118	80-120
Uranium 238	20.5	2.0	0.85	1.0		U	20.2	0.81	102	82-118	80-120

100-HR-3 Pump & Treat-Resin Sampling

QC-LCS #36905

LAB CONTROL SAMPLES

Page 1

SUMMARY DATA SECTION

Page 8

Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-LCS</u>
Version <u>3.06</u>
Report date <u>01/05/01</u>

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H1151

R011165-05

B10V62

**DUPLICATE**

SDG <u>7575</u>		Client/Case no <u>Hanford</u> <u>SDG H1151</u>	
Contact <u>Melissa C. Mannion</u>		Case no <u>TRC-SBB-207925</u>	
<b>DUPLICATE</b>		<b>ORIGINAL</b>	
Lab sample id <u>R011165-05</u>	Lab sample id <u>R011165-01</u>	Client sample id <u>B10V62</u>	
Dept sample id <u>7575-005</u>	Dept sample id <u>7575-001</u>	Location/Matrix <u>100-HR-3</u> <u>SOLID</u>	
	Received <u>11/22/00</u>	Collected <u>11/20/00 08:00</u>	
% solids <u>100.0</u>	% solids <u>100.0</u>	Custody/SAF No <u>B99-028-57</u> <u>B99-028</u>	

ANALYTE	DUPLICATE pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST	ORIGINAL pCi/g	2σ ERR (COUNT)	MDA pCi/g	QUALI- FIERS	RPD %	3σ PROT TOT LIMIT
Tritium	11.6	3.8	5.8	400	J	H	13.0	3.9	5.9	J	11	70
Total Strontium	-0.012	0.097	0.21	1.0	U	SR	-0.035	0.17	0.37	U	-	
Technetium 99	0.570	0.60	1.7	15	U	TC	0.118	0.46	1.4	U	-	
Uranium 233	0.021	0.043	0.16	1.0	U	U	0.051	0.10	0.20	U	-	
Uranium 235	0	0.052	0.20	1.0	U	U	0	0.062	0.24	U	-	
Uranium 238	0.043	0.043	0.16	1.0	U	U	0	0.051	0.20	U	-	

100-HR-3 Pump & Treat-Resin Sampling

QC-DUP#1 36907
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Lab id <u>TMANC</u>
Protocol <u>Hanford</u>
Version <u>Ver 1.0</u>
Form <u>DVD-DUP</u>
Version <u>3.06</u>
Report date <u>01/05/01</u>



**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

R011165-01

B10V62

**D A T A   S H E E T**

SDG <u>7575</u>	Client/Case no <u>Hanford</u>	SDG <u>H1151</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011165-01</u>	Client sample id <u>B10V62</u>	
Dept sample id <u>7575-001</u>	Location/Matrix <u>100-HR-3</u>	<u>SOLID</u>
Received <u>11/22/00</u>	Collected <u>11/20/00 08:00</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-57</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	13.0	3.9	5.9	400	J	H
Total Strontium	SR-RAD	-0.035	0.17	0.37	1.0	U	SR
Technetium 99	14133-76-7	0.118	0.46	1.4	15	U	TC
Uranium 233	U-233/234	0.051	0.10	0.20	1.0	U	U
Uranium 235	15117-96-1	0	0.062	0.24	1.0	U	U
Uranium 238	U-238	0	0.051	0.20	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

**TMA / RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

R011165-02

B10V63

**D A T A   S H E E T**

SDG <u>7575</u>	Client/Case no <u>Hanford</u>	SDG <u>H1151</u>
Contact <u>Melissa C. Mannion</u>	Contract <u>TRC-SBB-207925</u>	
Lab sample id <u>R011165-02</u>	Client sample id <u>B10V63</u>	
Dept sample id <u>7575-002</u>	Location/Matrix <u>100-HR-3</u>	<u>SOLID</u>
Received <u>11/22/00</u>	Collected <u>11/20/00 08:15</u>	
% solids <u>100.0</u>	Custody/SAF No <u>B99-028-57</u>	<u>B99-028</u>

ANALYTE	CAS NO	RESULT pCi/g	2σ ERR (COUNT)	MDA pCi/g	RDL pCi/g	QUALI- FIERS	TEST
Tritium	10028-17-8	7.86	3.6	5.7	400	J	H
Total Strontium	SR-RAD	0.031	0.16	0.32	1.0	U	SR
Technetium 99	14133-76-7	0.282	0.43	1.3	15	U	TC
Uranium 233	U-233/234	0	0.050	0.19	1.0	U	U
Uranium 235	15117-96-1	0	0.060	0.23	1.0	U	U
Uranium 238	U-238	0.099	0.10	0.19	1.0	U	U

100-HR-3 Pump & Treat-Resin Sampling

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H1151

**METHOD SUMMARY**  
URANIUM, ISOTOPIC IN SOIL  
ALPHA SPECTROSCOPY

Test U Matrix SOLID  
SDG 7575  
Contact Melissa C. Mannion

Client Hanford  
Contract TRC-SBB-207925  
Contract SDG H1151

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	1: Uranium 233	2: Uranium 235	3: Uranium 238	RESULT RATIOS (%)			
								1+3	2σ	2+3	2σ
Preparation batch 6962-145											
B10V62	R011165-01			7575-001	U	U	U				
B10V63	R011165-02			7575-002	U	U	U				
BLK (QC ID=36906)	R011165-04			7575-004	U	U	U				
LCS (QC ID=36905)	R011165-03			7575-003	ok	ok	ok				
Duplicate (R011165-01)	R011165-05			7575-005	- U	- U	- U				
Nominal values and limits from method				RDLs (pCi/g)	1.0	1.0	1.0	100		4	
100-HR-3 Pump & Treat-Resin Sampling								Averages			

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MAX MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-145 2σ prep error 5.0 % Reference Lab Notebook 6962 pg. 145																
B10V62	R011165-01			0.24	0.520			78		110			32	12/14/00	12/22	SS-033
B10V63	R011165-02			0.23	0.520			85		110			32	12/14/00	12/22	SS-035
BLK (QC ID=36906)	R011165-04			0.24	0.500			79		110				12/14/00	12/22	SS-034
LCS (QC ID=36905)	R011165-03			0.89	0.500			89		110				12/14/00	12/22	SS-041
Duplicate (R011165-01) (QC ID=36907)	R011165-05			0.20	0.590			88		110			32	12/14/00	12/22	SS-038
Nominal values and limits from method				1.0	0.500			20-105		100	100		180			

PROCEDURES REFERENCE UIISO\_PLATE\_AEA  
CP-911 Uranium in Water and Dissolved Sample by  
Extraction Chromatography, rev 2  
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 0.36 ± 0.59  
FOR 5 SAMPLES YIELD 84 ± 10

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H1151

**METHOD SUMMARY**  
TOTAL STRONTIUM IN SOIL  
BETA COUNTING

Test SR Matrix SOLID  
SDG 7575  
Contact Melissa C. Mannion

Client Hanford  
Contract TRC-SBB-207925  
Contract SDG H1151

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	PLANCHET	Total Strontium
Preparation batch 6962-145					
B10V62	R011165-01			7575-001	U
B10V63	R011165-02			7575-002	U
BLK (QC ID=36906)	R011165-04			7575-004	U
LCS (QC ID=36905)	R011165-03			7575-003	ok
Duplicate (R011165-01)	R011165-05			7575-005	- U

Nominal values and limits from method RDLs (pCi/g) 1.0  
100-HR-3 Pump & Treat-Resin Sampling

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST	SUF- FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-145 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 145																
B10V62	R011165-01			0.37	1.01			72	100				24	12/14/00	12/14	GRB-222
B10V63	R011165-02			0.32	1.00			81	100				24	12/14/00	12/14	GRB-204
BLK (QC ID=36906)	R011165-04			0.25	1.00			76	100					12/14/00	12/14	GRB-221
LCS (QC ID=36905)	R011165-03			0.24	1.00			77	<u>92</u>					12/14/00	12/14	GRB-229
Duplicate (R011165-01) (QC ID=36907)	R011165-05			0.21	1.09			74	100				24	12/14/00	12/14	GRB-232

Nominal values and limits from method 1.0 1.00 30-105 100 180

PROCEDURES REFERENCE SRTOT\_SEP\_PRECIP\_GPC  
CP-502 Strontium in Solids, rev 2  
CP-519 Strontium Planchet Demounting and Preparation for  
90Y Decontamination, rev 2

AVERAGES ± 2 SD MDA 0.28 ± 0.13  
FOR 5 SAMPLES YIELD 76 ± 7

**TMA/RICHMOND**  
SAMPLE DELIVERY GROUP H1151

**METHOD SUMMARY**  
TECHNETIUM 99 IN SOIL  
BETA COUNTING

Test IC Matrix SOLID  
SDG 7575  
Contact Melissa C. Mannion

Client Hanford  
Contract TRC-SBB-207925  
Contract SDG H1151

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Technetium 99
Preparation batch 6962-145				
B10V62	R011165-01		7575-001	U
B10V63	R011165-02		7575-002	U
BLK (QC ID=36906)	R011165-04		7575-004	U
LCS (QC ID=36905)	R011165-03		7575-003	ok
Duplicate (R011165-01)	R011165-05		7575-005	- U

Nominal values and limits from method RDLs (pCi/g) 15  
100-HR-3 Pump & Treat-Resin Sampling

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- TEST FIX	MDA pCi/g	ALIQ g	PREP FAC	DILU- TION	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
Preparation batch 6962-145 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 145																
B10V62	R011165-01			1.4	1.00			39		50			32	12/19/00	12/22	GRB-229
B10V63	R011165-02			1.3	1.05			37		50			32	12/19/00	12/22	GRB-230
BLK (QC ID=36906)	R011165-04			0.82	1.00			62		50				12/19/00	12/22	GRB-232
LCS (QC ID=36905)	R011165-03			0.95	1.00			45		75				12/19/00	12/28	GRB-231
Duplicate (R011165-01) (QC ID=36907)	R011165-05			1.7	1.00			30		50			37	12/19/00	12/27	GRB-202

Nominal values and limits from method 15 1.00 20-105 50 180

PROCEDURES REFERENCE TC99\_TR\_SEP\_LSC  
CP-060 Soil Preparation, rev 2  
CP-021 Preparation of Tc-99m Tracer, rev 0  
CP-002 Q.C. Preparation, rev 2  
CP-003 Tracing, rev 2  
CP-542 Technetium-99 Purification (Soil) by Extraction  
Chromatography, rev 0  
CP-008 Heavy Element Electroplating, rev 3

AVERAGES ± 2 SD MDA 1.2 ± 0.71  
FOR 5 SAMPLES YIELD 43 ± 24

**METHOD SUMMARIES**

Page 3

**SUMMARY DATA SECTION**

Page 14

Lab id TMANC  
Protocol Hanford  
Version Ver 1.0  
Form DVD-CMS  
Version 3.06  
Report date 01/05/01

**TMA/RICHMOND**  
**SAMPLE DELIVERY GROUP H1151**

Test H Matrix SOLID  
 SDG 7575  
 Contact Melissa C. Mannion

**METHOD SUMMARY**  
**TRITIUM IN SOIL**  
**LIQUID SCINTILLATION COUNTING**

Client Hanford  
 Contract TRC-SBB-207925  
 Contract SDG H1151

**RESULTS**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- PLANCHET	Tritium
------------------	------------------	-----------------	------------------	---------

Preparation batch 6962-145

B10V62	R011165-01	7575-001	13.0	J
B10V63	R011165-02	7575-002	7.86	J
BLK (QC ID=36906)	R011165-04	7575-004	U	
LCS (QC ID=36905)	R011165-03	7575-003	ok	
Duplicate (R011165-01)	R011165-05	7575-005	ok	J

Nominal values and limits from method RDLs (pCi/g) 400  
 100-HR-3 Pump & Treat-Resin Sampling

**METHOD PERFORMANCE**

CLIENT SAMPLE ID	LAB SAMPLE ID	RAW TEST FIX	SUF- pCi/g	MDA g	ALIQ FAC	PREP TION	DILU- %	YIELD %	EFF %	COUNT min	FWHM keV	DRIFT KeV	DAYS HELD	ANAL- PREPARED	YZED	DETECTOR
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Preparation batch 6962-145 2σ prep error 10.0 % Reference Lab Notebook 6962 pg. 145

B10V62	R011165-01		5.9	0.205			100		100				31	12/19/00	12/21	LSC-006
B10V63	R011165-02		5.7	0.208			100		100				32	12/19/00	12/22	LSC-006
BLK (QC ID=36906)	R011165-04		5.9	0.200			100		100					12/19/00	12/21	LSC-006
LCS (QC ID=36905)	R011165-03		5.6	0.200			100		100					12/19/00	12/22	LSC-006
Duplicate (R011165-01) (QC ID=36907)	R011165-05		5.8	0.206			100		100				31	12/19/00	12/21	LSC-006

Nominal values and limits from method 400 0.200 25 180

PROCEDURES	REFERENCE	TRITIUM_COX_LSC
	CP-060	Soil Preparation, rev 2
	CP-251	Tritium/Carbon-14 Oxidation, rev 2

AVERAGES ± 2 SD	MDA	5.8	±	0.26
FOR 5 SAMPLES	YIELD	100	±	0

**METHOD SUMMARIES**

Page 4

**SUMMARY DATA SECTION**

Page 15

Lab id TMANC  
 Protocol Hanford  
 Version Ver 1.0  
 Form DVD-CMS  
 Version 3.06  
 Report date 01/05/01

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>						<b>B99-028-57</b>		Page <u>1</u> of <u>1</u>						
Collector T.M. Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code <b>9N</b>		Data Turnaround <b>45 Days</b>						
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100-HR-3 <u>H1151 (7575)</u>		SAF No. B99-028		Air Quality <input type="checkbox"/>										
Ice Chest No. <u>SML-188</u>		Field Logbook No. EL-1516		COA R10HR3C570		Method of Shipment Federal Express										
Shipped To TMA/REGRA <u>11-11-00</u>		Offsite Property No. <u>A010012</u>		Bill of Lading/Air Bill No. <u>423579540739</u>												
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED.  <b>Special Handling and/or Storage</b>				Preservation		None	None	None	None	Coal 4C	None	Coal 4C	None			
				Type of Container		aG	aG	aG	aG	aG		G	aG			
				No. of Container(s)		1	1	1	1	1	1	1	1			
				Volume		60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL			
<b>SAMPLE ANALYSIS</b>				Isotopic Uranium	Strontium-89,90 - Total Sr	Technetium-99	Tritium - H3	Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)	IC Anions - 300.0 (Nitrate)	Selenium (4) in Special Instructions	Selenium (2) in Special Instructions					
Sample No.	Matrix *	Sample Date	Sample Time													
B10V62	OTHER SOLID	11-20-00	0800	X	X	X	X						97741			
B10V63	OTHER SOLID	11-20-00	0815	X	X	X	X						97742			
<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>				<b>Matrix *</b>				
Relinquished By <u>[Signature]</u>		Date/Time <u>11-20-00 12:00</u>		Received By <u>[Signature]</u>		Date/Time <u>11-20-00 12:00</u>		** If a limited quantity of sample material is received, perform analyses in order listed on the FSR. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)				S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Tissue W=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By <u>[Signature]</u>		Date/Time <u>11-22-00 10:00</u>		Received By <u>[Signature]</u>		Date/Time <u>11-22-00</u>										
Relinquished By		Date/Time		Received By		Date/Time										
Relinquished By		Date/Time		Received By		Date/Time										
Relinquished By		Date/Time		Received By		Date/Time										
<b>LABORATORY SECTION</b>		Received By		Title				Date/Time								
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method		Disposed By				Date/Time								

SAMPLE RECEIPT CHECKLIST

SAMPLE RECEIPT

Client: Bectel 4 Hanford Date/Time received 11-22-00 10:00

CoC No. B99-028-57, B99-029-62

Container I.D. No. 5ML-180 Requested TAT (Days) 45 P.O. Received Yes ☐ No ☒

INSPECTION

1. Custody seals on shipping container intact? Yes ☒ No ☐ N/A ☐
2. Custody seals on shipping container dated & signed? Yes ☒ No ☐ N/A ☐
3. Custody seals on sample containers intact? Yes ☒ No ☐ N/A ☐
4. Custody seals on sample containers dated & signed? Yes ☒ No ☐ N/A ☐
5. Cooler Temperature: \_\_\_\_\_ Packing material is: Wet ☐ Dry ☒
6. Number of samples in shipping container: 4
7. Number of containers per sample: 4 (Or see CoC \_\_\_\_\_)
8. Paperwork agrees with samples? Yes ☒ No ☐
9. Samples have: Tape ☒ Hazard labels ☐ Rad labels ☐ Appropriate sample labels ☒
10. Samples are: In good condition ☒ Leaking ☐ Broken Container ☐ Missing ☐
11. Describe any anomalies: The ice chest was shipped on 11-20-00 and got to Thermo Retec on 11-22-00
13. Was P.M. notified of any anomalies? Yes ☒ No ☐ Date 11-22-00
14. Received by PA Corno Date: 11-22-00 Time: 10:00

Customer Sample No.	cpm	mr/hr
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Customer Sample No.	Cpm	mr/hr
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Ion Chamber Ser. No. \_\_\_\_\_

Calibration date \_\_\_\_\_

Survey Meter Ser No. \_\_\_\_\_

Calibration date \_\_\_\_\_



Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B99-028 H1151

DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
---------------------	-------	-----	--------	------------	-----------	----------

B10V62

% SOLIDS	001		SO 00L&S187	11/20/00	11/27/00	11/28/00
% SOLIDS	001 REP		SO 00L&S187	11/20/00	11/27/00	11/28/00
NITRATE BY IC	001		SO 00LXC080	11/20/00	12/15/00	12/15/00
NITRATE BY IC	001 REP		SO 00LXC080	11/20/00	12/15/00	12/15/00
NITRATE BY IC	001 MS		SO 00LXC080	11/20/00	12/15/00	12/15/00
TCLP	001		SO 00LTO141	11/20/00	12/14/00	12/15/00

B10V63

% SOLIDS	002		SO 00L&S187	11/20/00	11/27/00	11/28/00
NITRATE BY IC	002		SO 00LXC080	11/20/00	12/15/00	12/15/00
TCLP	002		SO 00LTO141	11/20/00	12/14/00	12/15/00

LAB QC:

NITRATE BY IC	MB1	S	00LXC080	N/A	12/15/00	12/15/00
NITRATE BY IC	MB1 BS	S	00LXC080	N/A	12/15/00	12/15/00



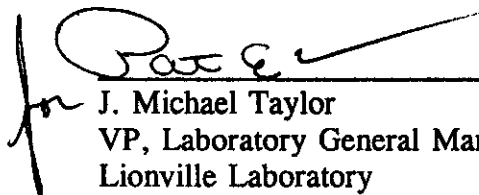
**Recra LabNet Philadelphia  
Analytical Report**

**Client : TNU-HANFORD B99-028 H1151**  
**RFW# : 0011L347**

**W.O. # : 10985-001-001-9999-00**  
**Date Received: 11-21-00**

**INORGANIC CASE NARRATIVE**

1. This narrative covers the analyses of 2 solid samples.
2. The samples were prepared and analyzed in accordance with the methods indicated on the attached glossary.
3. Sample holding times as required by the method and/or contract were met.
4. The cooler temperature was recorded on the chain-of-custody.
5. The method blank for Nitrate was within method criteria.
6. The Laboratory Control Sample (LCS) for Nitrate was within the laboratory control limits.
7. The matrix spike recovery for Nitrate was within the 75-125% control limits.
8. The replicate analyses were within the 20% Relative Percent Difference (RPD) control limit.
9. Results for solid samples were reported on a dry weight basis.
10. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.



\_\_\_\_\_  
J. Michael Taylor  
VP, Laboratory General Manager  
Lionville Laboratory  
njp\11-347

01-05-01  
Date

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 10 pages.

**WET CHEMISTRY**  
**METHODS GLOSSARY FOR SOIL/SOLIDS SAMPLE ANALYSIS**

	<u>ASTM</u>	<u>SW846</u>	<u>OTHER</u>
% Ash	___ D2216-80		
% Moisture	___ D2216-80		___ ILMO4.0 (e)
% Solids	___ D2216-80		___ ILMO4.0 (e)
% Volatile Solids	___ D2216-80		
ASTM Extraction in Water	___ D3987-81/85		
BTU	___ D240-87		
CEC		___ 9081	___ c
Chromium VI		___ 3060A/7196A	
Corrosivity ___ by coupon ___ by pH		___ 1110(mod) ___ 9045C	
Cyanide, Total		___ 9010B	___ ILMO4.0 (e)
Cyanide, Reactive		___ Section 7.3/9014	
Halides, Extractable Organic		___ 9020B	___ EPA 600/4/84-008
Halides, Total		___ 9020B	___ EPA 600/4/84-008
EP Toxicity		___ 1310A	
Flash Point		___ 1010	
Ignitability		___ 1010	
Oil & Grease		___ 9071A	
Carbon, Total Organic		___ 9060	___ Lloyd Kahn (mod)
Oxygen Bomb Prep for Anions	___ D240-87(mod)	___ 5050	
Petroleum Hydrocarbons, Total Recoverable		___ 9071	___ EPA 418.1
pH, Soil		___ 9045C	
Sulfide, Reactive		___ Section 7.3/9030B	
Sulfide		___ 9030B(mod)	
Specific Gravity	___ D1429-76C/	___ D5057-90	
Sulfur, Total		___ 9056	
Synthetic Preparation Leach		___ 1312	
Paint Filter		___ 9095A	
Other: <i>Nitrate</i>	Method: <i>EPA 300.0 (mod.)</i>		
Other:	Method		

## Recra LabNet Philadelphia METHOD REFERENCES AND DATA QUALIFIERS

### DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

### ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LC = Laboratory Control Sample.

NC = Not calculated.

A suffix of -R, -S, or -T following these codes indicate a replicate, spike or sample duplicate analysis respectively.

### ANALYTICAL WET CHEMISTRY METHODS

1. ASTM Standard Methods.
2. USEPA Methods for Chemical Analysis of Water and Wastes (USEPA 600/4-79-020).
3. Test Methods for Evaluating Solid Waste (USEPA SW-846).
  - a. Standard Methods for the Examination of Water and Waste, 16 ed, (1983).
  - b. Standard Methods for the Examination of Water and Waste, 17 ed, (1989)/18ed (1992).
  - c. Method of Soil Analysis, Part 1, Physical and Mineralogical Methods, 2nd ed, (1986).
  - d. Method of Soil Analysis, Part 2, Chemical and Microbiological Properties, Am. Soc. Agron., Madison, WI (1965).
  - e. USEPA Contract Laboratory Program, Statement of Work for Inorganic Analysis.
  - f. Code of Federal Regulations.

L-WI-034/D-6/99

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 12/19/00

CLIENT: TNUHANFORD B99-028 H1151  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L347

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
-----	-----	-----	-----	-----	-----	-----
-001	B10V62	% Solids	45.4	%	0.01	1.0
		Nitrate by IC	35	MG/KG	2.8	1.0
-002	B10V63	% Solids	45.3	%	0.01	1.0
		Nitrate by IC	38	MG/KG	2.8	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 12/19/00

CLIENT: TNUHANFORD B99-028 H1151  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L347

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
BLANK10	00LXC080-MB1	Nitrate by IC	1.2	u MG/KG	1.2	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 12/19/00

CLIENT: TNUHANFORD B99-028 H1151  
WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L347

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
-001	B10V62	Nitrate by IC	92	35	55	104.7	1.0
BLANK10	00LXC080-MB1	Nitrate by IC	24	1.2 u	25	96.8	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 12/19/00

CLIENT: TNUHANFORD B99-028 H1151  
 WORK ORDER: 10985-001-001-9999-00

RECRA LOT #: 0011L347

SAMPLE	SITE ID	ANALYTE	INITIAL RESULT	REPLICATE	RPD	DILUTION FACTOR (REP)
-001REP	B10V62	% Solids	45.4	45.6	0.42	1.0
		Nitrate by IC	35	37	4.6	1.0





Bechtel Hanford Inc.		CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST						B99-028-57		Page 1 of 1									
Collector T.M. Johansen		Company Contact T Pickett		Telephone No. 373-4630		Project Coordinator TRENT, SJ		Price Code 9N		Data Turnaround 45 Days									
Project Designation 100-HR-3 Pump & Treat - Resin Sampling		Sampling Location 100-HR-3		SAF No. B99-028		Air Quality <input type="checkbox"/>													
Ice Chest No. <b>ERC 99-042</b>		Field Logbook No. EL-1516		COA R10HR3C570		Method of Shipment Federal Express													
Shipped To TMA/RECRA <b>MD 11-16-00</b>		Offsite Property No. <b>A010031</b>		Bill of Lading/Air Bill No. <b>42357954 0717</b>															
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED.  <b>Special Handling and/or Storage</b>				Preservation		None	None	None	None	Cool 4C	None	Cool 4C	None						
				Type of Container		aG	aG	aG	aG	aG	aG	G	aG						
				No. of Container(s)		1	1	1	1	1	1	1	1						
				Volume		60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL						
<b>SAMPLE ANALYSIS</b>				Isotopic Uranium		Strontium-89,90 - Total Sr		Technetium-99		Tritium - 113		Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)		IC Anions - 3000 (Nitrate)		See item (1) in Special Instructions.		See item (2) in Special Instructions.	
Sample No.		Matrix *		Sample Date		Sample Time													
B10V62		OTHER SOLID		11-26-00		0800						X		X		X		X	
B10V63		OTHER SOLID		11-26-00		0815						X		X		X		X	
<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>								<b>Matrix *</b>			
Relinquished By		Date/Time		Received By		Date/Time		** If a limited quantity of sample material is received, perform analyses in order listed on the FSR. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)								S-Soil SE-Sediment SO-Solid S-Sludge W - Water O-Oil A-Air DS-Drum Solids DL-Drum Liquids T-Tissue WI-Wipe L-Liquid V-Vegetation X-Other			
Relinquished By		Date/Time		Received By		Date/Time													
Relinquished By		Date/Time		Received By		Date/Time													
Relinquished By		Date/Time		Received By		Date/Time													
Relinquished By		Date/Time		Received By		Date/Time													
<b>LABORATORY SECTION</b>		Received By		Title		Date/Time													
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method		Disposed By		Date/Time													

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B99-028 H1151



DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V62						
TCLP	001	SO	00LTO141	11/20/00	12/14/00	12/15/00
B10V63						
TCLP	002	SO	00LTO141	11/20/00	12/14/00	12/15/00
B10V62						
SILVER, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
SILVER, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	003	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	003	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 REP	W	99L1822	12/15/00	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	003 MS	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	003	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
LEAD, TCLP LEACHATE	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B99-028 H1151

DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
SELENIUM, TCLP LEACH	003	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 REP	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	003 MS	W	99L1822	12/15/00	12/15/00	12/18/00

B10V63

SILVER, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
ARSENIC, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
BARIUM, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	004	W	99L1822	12/15/00	12/15/00	12/19/00
CADMIUM, TCLP LEACHA	004	W	99L1822	12/15/00	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
NICKEL, TCLP LEACHAT	004	W	99L1822	12/15/00	12/15/00	12/19/00
LEAD, TCLP LEACHATE	004	W	99L1822	12/15/00	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00
SELENIUM, TCLP LEACH	004	W	99L1822	12/15/00	12/15/00	12/18/00

LAB QC:

SILVER LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
SILVER, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
ARSENIC LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
ARSENIC, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
BARIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
BARIUM, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB1	W	99L1822	N/A	12/15/00	12/19/00
BERYLLIUM, TCLP LEAC	MB2	W	99L1822	N/A	12/15/00	12/19/00
CADMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB1	W	99L1822	N/A	12/15/00	12/18/00
CADMIUM, TCLP LEACHA	MB2	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
CHROMIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
NICKEL LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/19/00

Recra LabNet - Lionville Laboratory  
INORGANIC ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B99-028 H1151

DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID /ANALYSIS	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
NICKEL, TCLP LEACHAT	MB1	W	99L1822	N/A	12/15/00	12/19/00
NICKEL, TCLP LEACHAT	MB2	W	99L1822	N/A	12/15/00	12/19/00
LEAD LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB1	W	99L1822	N/A	12/15/00	12/18/00
LEAD, TCLP LEACHATE	MB2	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
ANTIMONY, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM LABORATORY	LC1 BS	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB1	W	99L1822	N/A	12/15/00	12/18/00
SELENIUM, TCLP LEACH	MB2	W	99L1822	N/A	12/15/00	12/18/00

**Recra LabNet Philadelphia  
Analytical Report**

**Client:** TNU-HANFORD B99-028  
**RFW#:** 0011L347  
**SDG/SAF#:** H1151/B99-028

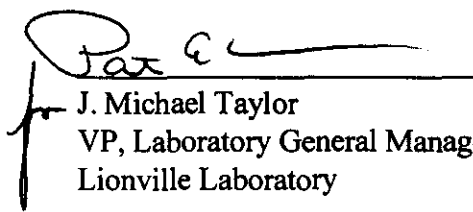
**W.O.#:** 10985-001-001-9999-00  
**Date Received:** 11-21-00

**METALS CASE NARRATIVE**

1. This narrative covers the analyses of 2 TCLP leachate samples.
2. The samples were prepared and analyzed in accordance with methods checked on the attached glossary.
3. All analyses were performed within the required holding times.
4. The cooler temperature has been recorded on the Chain of Custody.
5. All Initial and Continuing Calibration Verifications (ICV/CCVs) were within the 90-110% control limits (80-120% for Mercury).
6. All Initial and Continuing Calibration Blanks (ICB/CCBs) were within control limits (less than the PQL).
7. All preparation/method blanks (MB) were within method criteria {less than the Practical Quantitation Limit (3X the IDL), MB value less than 5% of the RCRA limit, or samples greater than 20X MB value}. Refer to the Inorganics Method Blank Data Summary.
8. All ICP Interference Check Standards were within control limits.
9. All laboratory control samples (LCS) were within the 80-120% control limits. Refer to form 7.
10. The duplicate analysis for 1 analyte was outside the 20% Relative Percent Difference (RPD) control limits. Refer to the Inorganics Precision Report.
11. The TCLP extract from sample B10V62 was selected for the matrix spike (MS) for this analytical batch. All MS recoveries were greater than 50% as per method criteria.

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 14 pages.

12. For the purposes of this report, the data has been reported to the Instrument Detection Limit (IDL). Values between the IDL and the Practical Quantitation Limit (PQL) are acquired in a region of less-certain quantification.
13. I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature.

  
J. Michael Taylor  
VP, Laboratory General Manager  
Lionville Laboratory  
gmb/ml1-347

01-05-01  
Date



# METALS METHOD GLOSSARY

The following methods are used as reference for the digestion and analysis of samples contained within this

Recra Lot#:

0011L347

Leaching Procedure: 1310 ☒ 1311 1312 Other: \_\_\_\_\_

CLP Metals    Digestion and    Analysis Methods:   ILM03.0   ILM04.0

Metals Digestion Methods:   3005A   3010A   3015   3020A   3050B   3051   200.7   SS17  
  Other: \_\_\_\_\_

## Metals Analysis Methods

	SW846	EPA	STD MTD	EPA OSWR	USATHAMA
Aluminum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Antimony	<input checked="" type="checkbox"/> <u>6010B</u> <u>7041</u> <sup>5</sup>	<u>200.7</u> <u>204.2</u>			<u>99</u>
Arsenic	<input checked="" type="checkbox"/> <u>6010B</u> <u>7060A</u> <sup>5</sup>	<u>200.7</u> <u>206.2</u>	<u>3113B</u>		<u>99</u>
Barium	<input checked="" type="checkbox"/> <u>6010B</u>	<u>200.7</u>			<u>99</u>
Beryllium	<input checked="" type="checkbox"/> <u>6010B</u>	<u>200.7</u>			<u>99</u>
Bismuth	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Boron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Cadmium	<input checked="" type="checkbox"/> <u>6010B</u> <u>7131A</u> <sup>5</sup>	<u>200.7</u> <u>213.2</u>			<u>99</u>
Calcium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Chromium	<input checked="" type="checkbox"/> <u>6010B</u> <u>7191</u> <sup>5</sup>	<u>200.7</u> <u>218.2</u>			<u>SS17</u>
Cobalt	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Copper	<u>6010B</u> <u>7211</u> <sup>5</sup>	<u>200.7</u> <u>220.2</u>			<u>99</u>
Iron	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Lead	<input checked="" type="checkbox"/> <u>6010B</u> <u>7421</u> <sup>5</sup>	<u>200.7</u> <u>239.2</u>	<u>3113B</u>		<u>99</u>
Lithium	<u>6010B</u> <u>7430</u> <sup>4</sup>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Magnesium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Manganese	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Mercury	<u>7470A</u> <sup>3</sup> <u>7471A</u> <sup>3</sup>	<u>245.1</u> <sup>2</sup> <u>245.5</u> <sup>2</sup>			<u>99</u>
Molybdenum	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Nickel	<input checked="" type="checkbox"/> <u>6010B</u>	<u>200.7</u>			<u>99</u>
Potassium	<u>6010B</u> <u>7610</u> <sup>4</sup>	<u>200.7</u> <u>258.1</u> <sup>4</sup>			<u>99</u>
Rare Earths	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Selenium	<input checked="" type="checkbox"/> <u>6010B</u> <u>7740</u> <sup>5</sup>	<u>200.7</u> <u>270.2</u>	<u>3113B</u>		<u>99</u>
Silicon	<u>6010B</u> <sup>1</sup>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silica	<u>6010B</u>	<u>200.7</u>		<u>1620</u>	<u>99</u>
Silver	<input checked="" type="checkbox"/> <u>6010B</u> <u>7761</u> <sup>5</sup>	<u>200.7</u> <u>272.2</u>			<u>99</u>
Sodium	<u>6010B</u> <u>7770</u> <sup>4</sup>	<u>200.7</u> <u>273.1</u> <sup>4</sup>			<u>99</u>
Strontium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Thallium	<u>6010B</u> <u>7841</u> <sup>5</sup>	<u>200.7</u> <u>279.2</u> <u>200.9</u>			<u>99</u>
Tin	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Titanium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Uranium	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>
Vanadium	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zinc	<u>6010B</u>	<u>200.7</u>			<u>99</u>
Zirconium	<u>6010B</u> <sup>1</sup>	<u>200.7</u> <sup>1</sup>		<u>1620</u>	<u>99</u>

Other: \_\_\_\_\_

Method: \_\_\_\_\_



# METHOD REFERENCES AND DATA QUALIFIERS

## DATA QUALIFIERS

U = Indicates that the parameter was not detected at or above the reported limit. The associated numerical value is the sample detection limit.

\* = Indicates that the original sample result is greater than 4x the spike amount added.

## ABBREVIATIONS

MB = Method or Preparation Blank.

MS = Matrix Spike.

MSD = Matrix Spike Duplicate.

REP = Sample Replicate

LCS = Laboratory Control Sample.

NC = Not calculated.

## ANALYTICAL METAL METHODS

1. Not included in the method element list.
2. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, 0.1 grams of sample is taken to a final volume of 50 mL (including all reagents).
3. Modified Hg: Hg1 and Hg2 require less total volume of digestate due to the autosampler analysis. Sample volumes and reagents for mercury determinations in water and soil have been proportionately scaled down to adapt to this semi-automated technique. The sample volume used for water analysis is 33 mL. For soils, three 0.1 gram of sample is taken to a final volume of 50 mL (including all reagents).
4. Flame AA.
5. Graphite Furnace AA.

RFW 21-21L-033/N-10/96

Recra LabNet - Lionville

INORGANICS DATA SUMMARY REPORT 01/04/01

CLIENT: TNUHANFORD B99-028 H1151

RECRA LOT #: 0011L347

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
*****	*****	*****	*****	*****	*****	*****
-003	B10V62	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	12.9	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	5470	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
-004	B10V63	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	14.2	UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	5660	UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS METHOD BLANK DATA SUMMARY PAGE 01/04/01

CLIENT: TNUHANFORD B99-028 H1151

RECRA LOT #: 0011L347

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	RESULT	UNITS	REPORTING LIMIT	DILUTION FACTOR
=====	=====	=====	=====	=====	=====	=====
BLANK1	99L1822-MB1	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	3.0	u UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0
BLANK2	99L1822-MB2	Silver, TCLP Leachate	2.5	u UG/L	2.5	1.0
		Arsenic, TCLP Leachate	33.9	u UG/L	33.9	1.0
		Barium, TCLP Leachate	42.4	u UG/L	3.0	1.0
		Beryllium, TCLP Leachate	0.60	u UG/L	0.60	1.0
		Cadmium, TCLP Leachate	3.4	u UG/L	3.4	1.0
		Chromium, TCLP Leachate	4.9	u UG/L	4.9	1.0
		Nickel, TCLP Leachate	12.5	u UG/L	12.5	1.0
		Lead, TCLP Leachate	25.0	u UG/L	25.0	1.0
		Antimony, TCLP Leachate	17.0	u UG/L	17.0	1.0
		Selenium, TCLP Leachate	62.3	u UG/L	62.3	1.0

Recra LabNet - Lionville

INORGANICS ACCURACY REPORT 01/04/01

CLIENT: TNUHANFORD B99-028 H1151

RECRA LOT #: 0011L347

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	INITIAL RESULT	SPIKED AMOUNT	%RECOV	DILUTION FACTOR (SPK)
*****	*****	*****	*****	*****	*****	*****	*****
-003	B10V62	Silver, TCLP Leachate	2790	2.5 u	5000	55.8	1.0
		Arsenic, TCLP Leachate	5150	33.9 u	5000	103.0	1.0
		Barium, TCLP Leachate	96200	12.9	100000	96.2	1.0
		Beryllium, TCLP Leacha	893	0.60u	1000	89.3	1.0
		Cadmium, TCLP Leachate	996	3.4 u	1000	99.6	1.0
		Chromium, TCLP Leachat	10200	5470	5000	95.3	1.0
		Nickel, TCLP Leachate	945	12.5 u	1000	94.5	1.0
		Lead, TCLP Leachate	5200	25.0 u	5000	103.9	1.0
		Antimony, TCLP Leachat	679	17.0 u	1000	67.9	1.0
		Selenium, TCLP Leachat	1010	62.3 u	1000	101.4	1.0

Recra LabNet - Lionville

INORGANICS PRECISION REPORT 01/04/01

CLIENT: TNUHANFORD B99-028 H1151

RECRA LOT #: 0011L347

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	INITIAL			DILUTION FACTOR (REP)
			RESULT	REPLICATE	RPD	
*****	*****	*****	*****	*****	*****	*****
-003REP	B10V62	Silver, TCLP Leachate	2.5 u	2.5 u	NC	1.0
		Arsenic, TCLP Leachate	33.9 u	43.8	<del>NC</del> 200	1.0
		Barium, TCLP Leachate	12.9	13.0	0.77	1.0
		Beryllium TCLP Leachate	0.60u	0.60u	NC	1.0
		Cadmium, TCLP Leachate	3.4 u	3.4 u	NC	1.0
		Chromium, TCLP Leachate	5470	5090	7.2	1.0
		Nickel, Leachate	12.5 u	12.5 u	NC	1.0
		Lead, TCLP Leachate	25.0 u	25.0 u	NC	1.0
		Antimony, Leachate	17.0 u	17.0 u	NC	1.0
		Selenium, TCLP Leachate	62.3 u	62.3 u	NC	1.0

JPB  
1/5/01

Recra LabNet - Lionville

INORGANICS LABORATORY CONTROL STANDARDS REPORT 01/04/01

CLIENT: TNUHANFORD B99-028 H1151

RECRA LOT #: 0011L347

WORK ORDER: 10985-001-001-9999-00

SAMPLE	SITE ID	ANALYTE	SPIKED SAMPLE	SPIKED AMOUNT	UNITS	%RECOV
*****	*****	*****	*****	*****	*****	*****
LCS1	99L1822-LC1	Silver, LCS	492	500	UG/L	98.5
		Arsenic, LCS	9380	10000	UG/L	93.8
		Barium, LCS	4950	5000	UG/L	99.0
		Beryllium, LCS	245	250	UG/L	98.1
		Cadmium, LCS	238	250	UG/L	95.2
		Chromium, LCS	476	500	UG/L	95.2
		Nickel, LCS	2010	2000	UG/L	100.7
		Lead, LCS	2380	2500	UG/L	95.4
		Antimony, LCS	2850	3000	UG/L	94.9
		Selenium, LCS	9380	10000	UG/L	93.8

0011L 347

FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS

Client <u>Tnu - Hanford B99-028</u>				Refrigerator #		A		B		C		D		S		S		S		S	
Est. Final Proj. Sampling Date				#/Type Container		Liquid		Solid		Liquid		Solid		Liquid		Solid		Liquid		Solid	
Project # <u>10985-001-001-9999-00</u>				Volume		Liquid		Solid		Liquid		Solid		Liquid		Solid		Liquid		Solid	
Project Contact/Phone #				Preservatives		—		—		—		—		—		—		—		—	
RECRA Project Manager <u>OJ</u>				ANALYSES REQUESTED		ORGANIC		INORG		ICP Metal		ICP Non		ICP Arsenic		ICP Lead		ICP Cadmium		ICP Chromium	
QC <u>Spec</u> Del <u>Std</u> TAT <u>30 day</u>				Date Rec'd <u>11-21-00</u> Date Due <u>12-21-00</u>		VOA		BNA		Pest/PCB		Herb		ICP Metal		ICP Non		ICP Arsenic		ICP Lead	
Account #				Matrix QC Chosen (✓)		MS		MSD		Matrix		Date Collected		Time Collected		CL24X		CL25X		RECRA LabNet Use Only	
MATRIX CODES:				Lab ID		Client ID/Description		Matrix		Date Collected		Time Collected		CL24X		CL25X		RECRA LabNet Use Only		ICP Metal	
S - Soil				001		B10V62		S6		11/20/00		0800		X		X		ICP Metal		ICP Non	
SE - Sediment				002		B10V63		1		1		0815		X		X		ICP Metal		ICP Non	
SO - Solid				003		B10V62 tcp of 001		L		*		-						ICP Metal		ICP Non	
SL - Sludge				004		1 3 1 002		1		1		-						ICP Metal		ICP Non	
W - Water																					
O - Oil																					
A - Air																					
DS - Drum Solids																					
DL - Drum Liquids																					
L - EP/TCLP Leachate																					
WI - Wipe																					
X - Other																					
F - Fish																					

Special Instructions:

Saf B99-028

Run Matrix QC

DATE/REVISIONS:

\* 1. See labchron  
 Met(U) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Bi, Ni  
 3. \_\_\_\_\_  
 4. \_\_\_\_\_  
 5. \_\_\_\_\_  
 6. \_\_\_\_\_

RECRA LabNet Use Only

Samples were:  
 1) Shipped ☒ or Hand Delivered \_\_\_\_\_  
 Airbill # \_\_\_\_\_  
 2) Ambient or Chilled ☒  
 3) Received in Good Condition ☒ or N  
 4) Labels Indicate Properly Preserved ☒ or N  
 5) Received Within Holding Times ☒ or N

COC Tape was:  
 1) Present on Outer Package ☒ or N  
 2) Unbroken on Outer Package ☒ or N  
 3) Present on Sample ☒ or N  
 4) Unbroken on Sample ☒ or N  
 COC Record Present Upon Sample Rec't ☒ or N  
 Cooler Temp. 3.1 °C

Relinquished by

Received by

Date

Time

Relinquished by

Received by

Date

Time

COMPOSITE

ORIGINAL  
REWRITTEN

Discrepancies Between  
 Samples Labels and  
 COC Record? Y or N ☒  
 NOTES:

# 4235 7954 0717

<b>Bechtel Hanford Inc.</b>		<b>CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST</b>						<b>B99-028-57</b>		<b>Page 1 of 1</b>		
<b>Collector</b> T.M. Johansen		<b>Company Contact</b> T Pickett		<b>Telephone No.</b> 373-4630		<b>Project Coordinator</b> TRENT, SJ		<b>Price Code</b> 9N		<b>Data Turnaround</b> <b>45 Days</b>		
<b>Project Designation</b> 100-HR-3 Pump & Treat - Resin Sampling		<b>Sampling Location</b> 100-HR-3		<b>SAF No.</b> B99-028		<b>Air Quality</b> <input type="checkbox"/>						
<b>Ice Chest No.</b> <i>ERC 99-042</i>		<b>Field Logbook No.</b> EL-1516		<b>COA</b> R10HR3C570		<b>Method of Shipment</b> Federal Express						
<b>Shipped To</b> FMA/RECRA <i>11-16-00</i>		<b>Offsite Property No.</b> <i>A010031</i>				<b>Bill of Lading/Air Bill No.</b> <i>42357954 0717</i>						
<b>POSSIBLE SAMPLE HAZARDS/REMARKS</b> HISTORICAL DATA INDICATES SAMPLES ARE LESS THAN 2000 pci TOTAL ACTIVITY. NO TOTAL ACTIVITY REQUIRED.  <b>Special Handling and/or Storage</b>				<b>Preservation</b>	None	None	None	None	Cool 4C	None	Cool 4C	None
				<b>Type of Container</b>	aG	aG	aG	aG	aG	aG	G	aG
				<b>No. of Container(s)</b>	1	1	1	1	1	1	1	
				<b>Volume</b>	60mL	60mL	60mL	125mL	250mL	250mL	250mL	500mL
<b>SAMPLE ANALYSIS</b>				<b>Isotopic Uranium</b>	<b>Strontium-89,90 - Total Sr</b>	<b>Technetium-99</b>	<b>Tritium - H3</b>	<b>Semi-VOA - 8270A (TCL) (Bis(2-ethylhexyl) phthalate)</b>	<b>IC Anions - 300.0 (Nitrate)</b>	<b>See item (1) in Special Instructions.</b>	<b>See item (2) in Special Instructions.</b>	
<b>Sample No.</b>	<b>Matrix *</b>	<b>Sample Date</b>	<b>Sample Time</b>									
B10V62	OTHER SOLID	11-20-00	0800					X	X	X	X	
B10V63	OTHER SOLID	11-20-00	0815					X	X	X	X	
<b>CHAIN OF POSSESSION</b>				<b>Sign/Print Names</b>				<b>SPECIAL INSTRUCTIONS</b>				
Relinquished By <i>[Signature]</i>		Date/Time <i>11-20-00</i>		Received By <i>[Signature]</i>		Date/Time <i>11-20-00</i>		** If a limited quantity of sample material is received, perform analyses in order listed on the FSR. (1) VOA - 8260A (TCL) (Chloroform, Methylenechloride); VOA - 8260A (Add-On) (Trichloromonofluoromethane) (2) Metals by ICP (TCLP) - 1311/6010 (Arsenic, Barium, Cadmium, Chromium, Lead, Selenium, Silver); Metals by ICP (TCLP) Add-on - 1311/6010 (Antimony, Beryllium, Nickel)				
Relinquished By <i>[Signature]</i>		Date/Time <i>11-20-00 10:15</i>		Received By <i>[Signature]</i>		Date/Time <i>11-20-00 10:15</i>						
Relinquished By		Date/Time		Received By		Date/Time						
Relinquished By		Date/Time		Received By		Date/Time						
Relinquished By		Date/Time		Received By		Date/Time						
Relinquished By		Date/Time		Received By		Date/Time		<b>Matrix *</b> S=Soil SE=Sediment SO=Solid S=Sludge W=Water O=Oil A=Air DS=Drum Solids DL=Drum Liquids T=Trash WI=Wipe L=Liquid V=Vegetation X=Other				
Relinquished By		Date/Time		Received By		Date/Time						
<b>LABORATORY SECTION</b>		Received By		Title				Date/Time				
<b>FINAL SAMPLE DISPOSITION</b>		Disposal Method		Disposed By				Date/Time				



Recra LabNet - Lionville Laboratory  
 BNA ANALYTICAL DATA PACKAGE FOR  
 TNUHANFORD B99-028 H1151

DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V62	001	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V62	001 MS	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V62	001 MSD	SO	00LE1537	11/20/00	11/24/00	12/22/00
B10V63	002	SO	00LE1537	11/20/00	11/24/00	12/22/00

LAB QC:

SBLKHR	MB1	S	00LE1537	N/A	11/24/00	12/21/00
SBLKHR	MB1 BS	S	00LE1537	N/A	11/24/00	12/21/00



**Client:** TNU-HANFORD B99-028  
**RFW #:** 0011L347  
**SDG/SAF #:** H1151/B99-028

**W.O. #:** 10985-001-001-9999-00  
**Date Received:** 11-21-2000

**SEMIVOLATILE**

Two (2) solid samples were collected on 11-20-2000.

The samples and their associated QC samples were extracted on 11-24-2000 and analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8270C for TCL Semivolatile target compound Bis(2-Ethylhexyl)phthalate on 12-21,22-2000.


The following is a summary of the QC results accompanying the sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were extracted and analyzed within required holding times.
3. Six (6) of eighteen (18) surrogate recoveries were outside acceptance criteria. The surrogate recovery criteria were not met for B10V62 MS, the method blank and method blank spike. The analysis of associated matrix spike duplicate fulfills the reanalysis requirement. The problem with the method QC was isolated to the QC and there was no significant impact on the data. A copy of the Sample Discrepancy Report (SDR) has been enclosed.
4. Six (6) of twelve (12) base/neutral matrix spike recoveries were outside EPA QC limits.

Four (4) of six (6) base/neutral blank spike recoveries were outside EPA QC limits.

The target compound is not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blank contained the common laboratory contaminant Bis(2-Ethylhexyl)phthalate at a level less than 2x the CRQL.
6. All internal standard area and retention time criteria were met.
7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
J. Michael Taylor  
V.P./Laboratory General Manager  
Lionville Laboratory

01-09-01  
Date

son\group\data\bna\tnu-hanford-11-347.doc

The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 9 pages.

## RECRA

## Sample Discrepancy Report (SDR)

SDR #: DOM 5403

Initiator: S Layman Batch: 6011 L347 Parameter: BNA  
Date: 12-26-00 Samples: \_\_\_\_\_ Matrix: Soil  
Client: INV Hanford Method: SW846/MCAWW/CLP/ Prep Batch: COLE1537

## 1. Reason for SDR

- a. COC Discrepancy ☐ Tech Profile Error ☐ Client Request ☐ Sampler Error on C-O-C  
☐ Transcription Error ☐ Wrong Test Code ☐ Other \_\_\_\_\_
- b. General Discrepancy  
☐ Missing Sample/Extract ☐ Container Broken ☐ Wrong Sample Pulled ☐ Label ID's Illegible  
☐ Hold Time Exceeded ☐ Insufficient Sample ☐ Preservation Wrong ☐ Received Past Hold  
☐ Improper Bottle Type ☐ Not Amenable to Analysis

Note: Verified by [Log-In] or [Prep Group] (circle)...signature/date: \_\_\_\_\_

## c. QC Problem (Include all relevant specific results; attach data if necessary)

Bik, Blank Spike, MS all have low surrogate, spike recoveries  
b1s - (2-ethylhexyl)phthalate above CRQL in Bik (but > 5x CRQL)

## 2. Known or Probable Causes(s) (To be used for trend analysis)

- ☐ Lack of Organization ☐ Other (Please explain): \_\_\_\_\_  
☐ Lack of Training  
☐ Lack of Discipline  
☐ Lack of Resources  
☐ Lack of Time  
☐ Lack of Management Support

## 3. Discussion and Proposed Action

- ☐ Re-log  
☐ Entire Batch  
☐ Following Samples: \_\_\_\_\_  
☐ Re-leach  
☐ Re-extract  
☐ Re-digest  
☐ Revise EDD  
☐ Change Test Code to \_\_\_\_\_  
☐ Place On/Take Off Hold (circle)

Other Description: narrate - b1s (2-ethylhexyl)phthalate  
5 levels in samples. All surrogate  
recoveries in sample OK - All spike  
recoveries OK in MSD.

report + narrate

## 4. Project Manager Instructions...signature/date:

- ☒ Concur with Proposed Action  
☐ Disagree with Proposed Action; See Instruction  
☐ Include in Case Narrative  
☐ Client Contacted:  
Date/Person \_\_\_\_\_  
☐ Add  
☐ Cancel

Teresa Johnson 12/27/01

## 5. Final Action...signature/date:

- ☒ Verified re-[log][leach][extract][digest][analysis] (circle)  
☒ Included in Case Narrative  
☐ Hard Copy COC Revised  
☐ Electronic COC Revised  
☐ EDD Corrections Completed

Other Explanation: \_\_\_\_\_

When Final Action has been recorded, forward original to QA for distribution and filing.

## Route/Distribution of SDR

- ☐ Initiator  
☐ Lab Manager: M. Taylor  
☐ Project Mgr: Stone/Carey/Johnson  
☐ Section Mgr: Wesson/Daniels  
☒ QA (file): Schrenkel  
☐ Data Management: Feldman  
☐ Sample Prep: Bickel/Kauffman

## Route Distribution of Completed SDR

- ☐ Metals: Doughty  
☐ Inorganic: Perrone  
☐ GC/LC: Pastor  
☐ MS: Layman/Rycklak  
☐ Log-in: Keppel  
☐ Admin: Soos  
☐ Other: \_\_\_\_\_

## GLOSSARY OF BNA DATA

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- A** = Indicates that a TIC is a suspected aldol-condensation product.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF BNA DATA

### ABBREVIATIONS

<b>BS</b>	<b>=</b>	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
<b>BSD</b>	<b>=</b>	Indicates blank spike duplicate.
<b>MS</b>	<b>=</b>	Indicates matrix spike.
<b>MSD</b>	<b>=</b>	Indicates matrix spike duplicate.
<b>DL</b>	<b>=</b>	Suffix added to sample number to indicate that results are from a diluted analysis.
<b>NA</b>	<b>=</b>	Not Applicable.
<b>DF</b>	<b>=</b>	Dilution Factor.
<b>NR</b>	<b>=</b>	Not Required.
<b>SP, Z</b>	<b>=</b>	Indicates Spiked Compound.



Recra LabNet - Lionville Laboratory

Semivolatiles by GC/MS, Special List

Report Date: 01/08/01 16:05

RFW Batch Number: 0011L347

Client: TNUHANFORD B99-028 H1151

Work Order: 10985001001

Page: 1a

	Cust ID:	B10V62	B10V62	B10V62	B10V63	SBLKHR	SBLKHR BS
Sample	RFW#:	001	001 MS	001 MSD	002	00LE1537-MB1	00LE1537-MB1
Information	Matrix:	SOLID	SOLID	SOLID	SOLID	SOIL	SOIL
	D.F.:	1.00	1.00	1.00	1.00	1.00	1.00
	Units:	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
	Nitrobenzene-d5	64 %	21 * %	82 %	77 %	0 * %	0 * %
Surrogate	2-Fluorobiphenyl	68 %	19 * %	86 %	63 %	9 * %	0 * %
Recovery	p-Terphenyl-d14	74 %	18 %	98 %	87 %	58 %	65 %
		=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====	=====fl=====
	bis(2-Ethylhexyl)phthalate	210 JB	45 JB	230 JB	250 JB	420 B	50 JB

\*= Outside of EPA CLP QC limits.

3D

## SOIL SEMIVOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNetContract: 0985-01-01Case No.: TNUHANFORD B99-028 H1151RFW Lot No.: 0011L347-001MATRIX Spike - Sample No.: B10V62Level: (low/med) LOW

COMPOUND	SPIKE ADDED UG/KG	SAMPLE CONCENTRATION UG/KG	MS CONCENTRATION UG/KG	MS % REC #	QC LIMITS REC
1,4-Dichlorobenzene	1670	0	305	18 *	28 -104
N-Nitroso-Di-n-propylamine	1670	0	358	22 *	41 -126
1,2,4-Trichlorobenzene	1670	0	306	18 *	38 -107
Acenaphthene	1670	0	361	22 *	31 -137
2,4-Dinitrotoluene	1670	0	286	17 *	28 -89
Pyrene	1670	0	304	18 *	35 -142

COMPOUND	SPIKE ADDED UG/KG	MSD CONCENTRATION UG/KG	MSD % REC #	% RPD #	QC LIMITS RPD	REC
1,4-Dichlorobenzene	1670	1080	65	114 *	27	28 -104
N-Nitroso-Di-n-propylamine	1670	1260	76	110 *	38	41 -126
1,2,4-Trichlorobenzene	1670	1170	70	118 *	23	38 -107
Acenaphthene	1670	1520	91	123 *	19	31 -137
2,4-Dinitrotoluene	1670	1350	81	130 *	47	28 -89
Pyrene	1670	1350	81	128 *	36	35 -142

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 6 out of 6 outside limitsSpike Recovery: 6 out of 12 outside limits

COMMENTS:

3D  
SOIL SEMIVOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet

Contract: 0985-01-01

Case No.: TNUHANFORD B99-028 H1151

RFW Lot No.: 0011L347

BLANK Spike - Sample No.: SBLKHRLE1537-MB1

Level: (low/med) LOW

COMPOUND	SPIKE	SAMPLE	BS	BS	QC	
	ADDED	CONCENTRATION	CONCENTRATION	%	LIMITS	
	UG/KG	UG/KG	UG/KG	REC #	REC	
1,4-Dichlorobenzene	1670	0	0	0 *	28	-104
N-Nitroso-Di-n-propylamine	1670	0	0	0 *	41	-126
1,2,4-Trichlorobenzene	1670	0	0	0 *	38	-107
Acenaphthene	1670	0	114	7 *	31	-137
2,4-Dinitrotoluene	1670	0	595	36	28	-89
Pyrene	1670	0	1020	61	35	-142

# Column to be used to flag recovery value with an asterisk

\* Values outside of QC limits

Spike Recovery: 4 out of 6 outside limits

COMMENTS:



**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**

COC Tape was:

- 1) Present on Outer Package ☒ or N
- 2) Unbroken on Outer Package ☒ or N
- 3) Present on Sample ☒ or N
- 4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec'l ☒ or N

Cooler Temp. 3.1 °C

# 4235 7954 0713

Recra LabNet - Lionville Laboratory  
VOA ANALYTICAL DATA PACKAGE FOR  
TNUHANFORD B99-028 H1151

DATE RECEIVED: 11/21/00

RFW LOT # :0011L347

CLIENT ID	RFW #	MTX	PREP #	COLLECTION	EXTR/PREP	ANALYSIS
B10V62	001		SO 00LVX393	11/20/00	N/A	11/29/00
B10V62	001	R1	SO 00LVX393	11/20/00	N/A	11/29/00
B10V63	002		SO 00LVX393	11/20/00	N/A	11/29/00
B10V63	002	MS	SO 00LVX393	11/20/00	N/A	11/29/00
B10V63	002	MSD	SO 00LVX393	11/20/00	N/A	11/29/00

LAB QC:

VBLKHY	MB1		S 00LVX393	N/A	N/A	11/29/00
VBLKHY	MB1	BS	S 00LVX393	N/A	N/A	11/29/00





Chemical and Environmental Measurement Information

**Recra LabNet Philadelphia  
Analytical Report**

**Client:** TNU-HANFORD B99-028  
**RFW #:** 0011L347  
**SDG/SAF #:** H1151/B99-028

**W.O. #:** 10985-001-001-9999-00  
**Date Received:** 11-21-2000

**GC/MS VOLATILE**

Two (2) solid samples were collected on 11-20-2000.

The samples and their associated QC samples were analyzed according to criteria set forth in Recra OPs based on SW 846 Method 8260A for client specified Volatile target compounds on 11-29-2000.

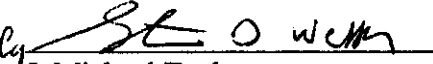
The following is a summary of the QC results accompanying these sample results and a description of any problems encountered during their analyses:

1. The cooler temperature upon receipt has been recorded on the chain-of-custody.
2. The samples were analyzed within required holding time.
3. One (1) of twenty-one (21) surrogate recoveries was outside EPA QC limits. The initial analysis fulfills the reanalysis requirement of sample B10V62 RE.
4. All matrix spike recoveries were within EPA QC limits.

All blank spike recoveries were within EPA QC limits.

The target compounds are not included in the spiking solution. (CLP spike recoveries have been reported on the Form 3.)

5. The method blank contained the common laboratory contaminant Methylene Chloride at a level less than 2x the CRQL.
6. Internal standard area criteria were not met the samples. The analysis of associated matrix spike samples fulfills the reanalysis requirement of sample B10V63. Sample B10V62 was reanalyzed on 11-29-2000 and reported.
7. "I certify that this sample data package is in compliance with SOW requirements, both technically and for completeness, other than the conditions detailed above. Release of the data contained in this hard-copy data package has been authorized by the Laboratory Manager or a designee, as verified by the following signature."

  
J. Michael Taylor  
V.P./Laboratory General Manager  
Lionville Laboratory

01-11-01  
Date

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The results presented in this report relate only to the analytical testing and conditions of the samples at receipt and during storage. All pages of this report are integral parts of the analytical data. Therefore, this report should only be reproduced in its entirety of 8 pages.

## GLOSSARY OF VOA DATA

### DATA QUALIFIERS

- U** = Compound was analyzed for but not detected. The associated numerical value is the estimated sample quantitation limit which is included and corrected for dilution and percent moisture.
- J** = Indicates an estimated value. This flag is used under the following circumstances: 1) when estimating a concentration for tentatively identified compounds (TICs) where a 1:1 response is assumed; or 2) when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the specified detection limit but greater than zero. For example, if the limit of detection is 10 ug/L and a concentration of 3 ug/L is calculated, it is reported as 3J.
- B** = This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates possible/probable blank contamination. This flag is also used for a TIC as well as for a positively identified TCL compound.
- E** = Indicates that the compound was detected beyond the calibration range and was subsequently analyzed at a dilution.
- D** = Identifies all compounds identified in an analysis at a secondary dilution factor.
- I** = Interference.
- NQ** = Result qualitatively confirmed but not able to quantify.
- N** = Indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N code is not used.
- X** = This flag is used for a TIC compound which is quantified relative to a response factor generated from a daily calibration standard (rather than quantified relative to the closest internal standard).
- Y** = Additional qualifiers used as required are explained in the case narrative.



## GLOSSARY OF VOA DATA

### ABBREVIATIONS

BS	=	Indicates blank spike in which reagent grade water is spiked with the CLP matrix spike solutions and carried through all the steps in the method. Spike recoveries are reported.
BSD	=	Indicates blank spike duplicate.
MS	=	Indicates matrix spike.
MSD	=	Indicates matrix spike duplicate.
DL	=	Suffix added to sample number to indicate that results are from a diluted analysis.
NA	=	Not Applicable.
DF	=	Dilution Factor.
NR	=	Not Required.
SP, Z	=	Indicates Spiked Compound.



Recra LabNet - Lionville Laboratory

Volatiles By GC/MS, Special List

Report Date: 01/05/01 10:06

RFW Batch Number: 0011L347

Client: TNUHANFORD B99-028 H1151 Work Order: 10985001001 Page: 1a

	Cust ID:	B10V62	B10V62	B10V63	B10V63	B10V63	VBKHY
Sample	RFW#:	001	001	002	002 MS	002 MSD	00LVX393-MB1
Information	Matrix:	SOLID	SOLID	SOLID	SOLID	SOLID	SOIL
	D.F.:	1.04	1.00	1.02	1.04	1.04	1.00
	Units:	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG	UG/KG
		REPREP					
	1,2-Dichloroethane-d4	85 %	84 %	89 %	81 %	84 %	86 %
Surrogate	Toluene-d8	138 %	134 %	140 %	137 %	137 %	96 %
Recovery	Bromofluorobenzene	67 %	63 * %	67 %	66 %	66 %	86 %
		=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====					
	Trichlorofluoromethane	3 J	3 J	3 J	2 J	3 J	5 U
	Methylene Chloride	32 B	40 B	29 B	37 B	39 B	8
	Chloroform	10 J	10 J	9 J	10 J	9 J	5 U

Cust ID: VBKHY BS

Sample RFW#: 00LVX393-MB1  
 Information Matrix: SOIL  
 D.F.: 1.00  
 Units: UG/KG

	1,2-Dichloroethane-d4	85 %
Surrogate	Toluene-d8	96 %
Recovery	Bromofluorobenzene	86 %
		=====fl=====fl=====fl=====fl=====fl=====fl=====fl=====
	Trichlorofluoromethane	5 U
	Methylene Chloride	8 B
	Chloroform	5 U

\*= Outside of EPA CLP QC limits.

3B  
SOIL VOLATILE MATRIX SPIKE/MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L347

Matrix Spike - EPA Sample No.: B10V63 Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	114.97	0.0000	127.02	110	59-172
Trichloroethene	114.97	0.0000	109.42	95	62-137
Benzene	114.97	0.0000	104.96	91	66-142
Toluene	114.97	0.0000	156.98	136	59-139
Chlorobenzene	114.97	0.0000	108.60	94	60-133

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC #	% RPD #	QC LIMITS	
=====	=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	114.97	124.31	108	2	22	59-172
Trichloroethene	114.97	106.64	93	2	24	62-137
Benzene	114.97	104.97	91	0	21	66-142
Toluene	114.97	154.17	134	1	21	59-139
Chlorobenzene	114.97	106.08	92	2	21	60-133

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 5 outside limits

Spike Recovery: 0 out of 10 outside limits

COMMENTS:

3B  
SOIL VOLATILE BLANK SPIKE RECOVERY

Lab Name: Recra.LabNet.Philadelphia Contract: 10985-001-001-9999-00

Lab Code: RECRA Case No.: SAS No.: SDG No.: 11L347

Matrix Spike - EPA Sample No.: VBLKHY Level: (low/med) LOW

COMPOUND	SPIKE ADDED (ug/Kg)	BLANK CONCENTRATION (ug/Kg)	BS CONCENTRATION (ug/Kg)	BS % REC #	QC. LIMITS REC.
=====	=====	=====	=====	=====	=====
1,1-Dichloroethene	50.000	0.0000	44.809	90	61-145
Trichloroethene	50.000	0.0000	46.535	93	71-120
Benzene	50.000	0.0000	45.998	92	76-127
Toluene	50.000	0.0000	47.575	95	76-125
Chlorobenzene	50.000	0.0000	48.180	96	75-130

# Column to be used to flag recovery and RPD values with an asterisk

\* Values outside of QC limits

RPD: 0 out of 0 outside limits

Spike Recovery: 0 out of 5 outside limits

COMMENTS: \_\_\_\_\_



**FIELD PERSONNEL: COMPLETE ONLY SHADED AREAS**[illegible]

Special instructions: SS 399-028

## Run Matrix QC

**DATE/REVISIONS:**

\* 1. See labchron

Me(V) 2. As, Ba, Cd, Cr, Pb, Se, Ag, Sb, Br, Ni

**RECRA LabNet Use Only**

Samples were  
1) Shipped ☒ or  
Hand Delivered ☐

Airbill # \_\_\_\_\_

2) Ambient or Chilled C

3) Received in Good Condition Y or N

4) Labels Indicate Property Preserved

### 5) Received Within Holding Times

COC Tape was:

- 1) Present on Outer Package ☒ or N
- 2) Unbroken on Outer Package ☒ or N
- 3) Present on Sample ☒ or N
- 4) Unbroken on Sample ☒ or N

COC Record Present Upon Sample Rec't ☒ or N

Cooler Temp. 3.1 °C

Relinquished by	Received by	Date	Time
MedEx	D. Smith	11/21/00	10:15

Relinquished by	Received by	Date	Time
COMPOSITE		ORIGINAL	REWRITTEN

Discrepancies Between  
Samples Labels and  
COC Record? Y or ☒ N

NOTES:

# 4235 7954 0717